

AMENDMENTS TO THE CLAIMS

1-59. (Canceled)

60. (Currently amended) ~~The surface treatment method according to claim 54A surface treatment method comprising:~~

introducing a supercritical fluid into a treatment chamber, a supercritical substance combined with a co-solvent or reactant becoming said supercritical fluid,

wherein a liquid form of said supercritical substance is absent from within said treatment chamber,

wherein the total amount of addition of said co-solvent or reactant in proportion to said supercritical substance of 40°C and 8 MPa is adjusted within a concentration range from 0.1 to 2 mol %.

61. (New) The surface treatment method according to claim 60, wherein said concentration range is 0.1 to 1 mol %.

62-72. (Canceled)

73. (Currently amended) ~~The surface treatment method according to claim 54, further comprising:~~ A surface treatment method comprising:

introducing a supercritical fluid into a treatment chamber, a supercritical substance combined with a co-solvent or reactant becoming said supercritical fluid, wherein a liquid form of said supercritical substance is absent from within said treatment chamber;

converting said supercritical substance within said treatment chamber into a gas form, the temperature and pressure of the inner atmosphere of the treatment chamber being lowered to convert said supercritical substance in said treatment chamber into said gas form.

74. (Canceled)

75. (New) A surface treatment method comprising:

heating a treatment chamber to a chamber temperature prior to introducing a supercritical substance into a treatment chamber, said chamber temperature being equal to or higher than a supercritical temperature of said supercritical substance;

heating said supercritical substance prior to being introduced into said treatment chamber, said supercritical substance being heated to a temperature equal to or higher than said supercritical temperature.

76. (New) The surface treatment method according to claim 75, wherein a liquid form of said supercritical substance is absent from within said treatment chamber.

77. (New) The surface treatment method according to claim 75, wherein said supercritical substance is carbon dioxide.

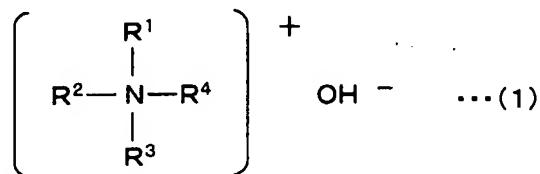
78. (New) The surface treatment method according to claim 75, wherein the temperature and pressure of the inner atmosphere of said treatment chamber is 40°C and 10 MPa or above.

79. (New) The surface treatment method according to claim 75, further comprising:
introducing said supercritical substance into said treatment chamber.

80. (New) The surface treatment method according to claim 79, further comprising:
introducing a co-solvent or reactant into said treatment chamber.

81. (New) The surface treatment method according to claim 80, wherein said co-solvent or reactant is from the group consisting of an ammonium hydroxide, an alkanolamine, an amine fluoride, and hydrofluoric acid.

82. (New) The surface treatment method according to claim 80, wherein said co-solvent or reactant is said ammonium hydroxide expressed by a formula (1):



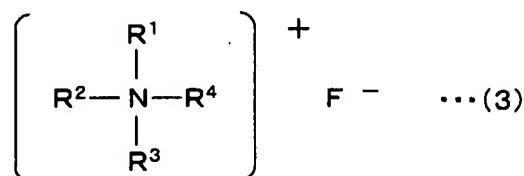
where each of R^1 to R^4 in the formula (1) independently denotes an alkyl group, hydroxy-substituted alkyl group, aryl group or hydrogen.

83. (New) The surface treatment method according to claim 80, wherein said co-solvent or reactant is said alkanolamine expressed by a formula (2):



where each of R^1 to R^3 in the formula (2) independently denotes an alkyl group, hydroxy-substituted alkyl group, aryl group or hydrogen.

84. (New) The surface treatment method according to claim 80, wherein said co-solvent or reactant is said amine fluoride expressed by the formula (3):



where each of R¹ to R⁴ in the formula (3) independently denotes an alkyl group, hydroxy-substituted alkyl group, aryl group or hydrogen.

85. (New) The surface treatment method according to claim 80, wherein said co-solvent or reactant is said hydrofluoric acid.

86. (New) The surface treatment method according to claim 80, wherein the total amount of addition of said co-solvent or reactant in proportion to said supercritical substance of 40°C and 8 MPa is adjusted within a concentration range from 0.1 to 2 mol %.

87. (New) The surface treatment method according to claim 86, wherein said concentration range is 0.1 to 1 mol %.

88. (New) The surface treatment method according to claim 80, further comprising:
supplying a surfactant into said treatment chamber.

89. (New) The surface treatment method according to claim 88, wherein said surfactant material is a polar solvent.

90. (New) The surface treatment method according to claim 88, wherein the total amount of addition of said surfactant in proportion to said supercritical substance of 40°C and 8 MPa is adjusted within a concentration range from 1 to 10 mol %.

91. (New) The surface treatment method according to claim 90, wherein said concentration range is 1 to 5 mol %.

92. (New) The surface treatment method according to claim 88, further comprising:
removing foreign matters from a surface of a substrate, a supercritical fluid removing said foreign matters,

wherein said supercritical fluid is a mixture of said supercritical substance, said surfactant, and said co-solvent or reactant.

93. (New) The surface treatment method according to claim 92, wherein said surface of the substrate has a photomask thereon, said photomask being utilized for lithography.

94. (New) The surface treatment method according to claim 92, wherein said surface of the substrate has a structural body thereon.

95. (New) The surface treatment method according to claim 94, wherein said structural body is a fine structural body with a hollow portion, a micro electromechanical systems, or an electrode pattern.

96. (New) The surface treatment method according to claim 92, further comprising:

discharging said supercritical fluid from within said treatment chamber, said foreign matters removed from said surface of the substrate being discharged along with said supercritical fluid.

97. (New) The surface treatment method according to claim 92, further comprising:

terminating a supply of said co-solvent or reactant and said surfactant to replace said supercritical fluid within said treatment chamber with said supercritical substance.

98. (New) The surface treatment method according to claim 97, further comprising:

converting said supercritical substance within said treatment chamber into a gas form, the temperature and pressure of the inner atmosphere of the treatment chamber being lowered to convert said supercritical substance in said treatment chamber into said gas form.

99. (New) A semiconductor device obtainable by the surface treatment method of claim

75.